

**METHOD AND SYSTEM FOR IMPROVING ION BEAM ALIGNMENT FOR
LIQUID CRYSTAL DISPLAYS BY A GROOVING UNDER LAYER**

ABSTRACT OF THE DISCLOSURE

A liquid crystal display (LCD) device comprises a first substrate having a grooved surface profile; an alignment film layer of inorganic material formed on the grooved surface and having the grooved surface profile, the alignment film of inorganic material being aligned in response to an ion beam incident to the grooved surface in a direction parallel to a groove direction; a second substrate aligned opposite the first substrate for forming a plurality of LCD cells having liquid crystal (LC) material deposited therein, wherein LC molecules align parallel to the grooves for enhanced LCD performance.